

REMARKS

This Amendment responds to the Office Action dated August 1, 2006 in which the Examiner rejected claims 1-8 under 35 U.S.C. §102(b), rejected claims 1-6 under 35 U.S.C. §102(e) and rejected claims 9-12 under 35 U.S.C. §103.

As indicated above, claim 1 has been amended in order to make explicit what is implicit in the claim. The amendment is unrelated to a statutory requirement for patentability.

Claim 1 claims a permanent magnet molding apparatus comprising: a mounting base, a transferable metal die unit, a pressurizing unit and a magnetic field generating means. The transferable metal die unit is transferable onto and off the mounting base. The die unit includes a die, a lid member and a pair of punches. The die has a cavity of a desired cross-sectional shape in which magnet molding material powder is filled. The cavity extends in groovelike form in a specific direction on a surface of the die. The lid member is placed against a facing surface of the die as if covering the cavity. The pair of punches have the same cross-sectional shape as the cavity. The punches are positioned to fit in the cavity such that the punches close the cavity at both ends thereof. The punches are made slidable in directions in which the punches go into contact with and become separated from the magnet molding material powder. The pressurizing means is for holding the metal die unit, which has been transferred to the mounting base, with the magnet molding material powder filled in the cavity and is for pressurizing the magnet molding material powder by driving the two punches such that the two punches slide in their approaching directions. The magnetic field generating means is for magnetizing the

magnet molding material powder pressurized in the cavity while applying a magnetic field thereto in a direction perpendicular to a direction of pressurization.

Through the structure of the claimed invention having a transferable metal die unit transferable onto and off a mounting base and a lid member, as claimed in claim 1, the claimed invention provides a permanent magnet holding apparatus with improved productivity and reliability. The prior art does not show, teach or suggest the invention as claimed in claim 1.

Claims 1-6 were rejected under 35 U.S.C. §102(b) as being anticipated by *El Hara* (U.S. Patent No. 3,555,621).

El Hara appears to disclose a compacting apparatus for magnetic powder. (Column 1, line 15). As shown in FIGS. 1 and 2 of the accompanying drawings, the molding apparatus is divided into an upper section and a lower section. The lower section comprises an annular exciting coil 11 wound upon a non-magnetic bobbin 21 contained in a magnetic core 33. Core 33 is provided with a hollow central leg 34 having a central bore receiving a lower plunger or die member 5. The upper portion of the central leg 34 and an upper yoke 35 are made of non-magnetic material. The upper section comprises an annular exciting coil 12 also wound upon a non-magnetic bobbin 2a. Coil 12, except the lower side thereof, and bobbin 2a are enclosed by a magnetic core 21. A hollow central leg 37 having a bore is provided to receive an upper plunger or die member 4, the lower portion 38 of the central leg 37 being made of non-magnetic material. A hollow upright retaining member 39 is provided on the upper surface of core 21 to engage a reduced diameter portion 42 of an operating rod 41 for the upper die member. The operating rod 41 and upper die member are biased upwardly by a spring 43 surrounding the reduced diameter

portion 42. When the upper section of the molding apparatus is separated from the lower molding section as shown in FIG. 1, a powder feed box 6 is brought to the position shown to charge a mold cavity 47 defined by the bore in the control leg 34 above the lower die member 5 with a powder of magnetic material *m*, ferrite for example. The feed box is reciprocated along the upper surface of non-magnetic yoke 35 of the lower core by means of a rod 61 and is provided with a push member 62 at its front side to remove the molded permanent magnet M. Then the feed box is moved to the left, and the upper section of the molding apparatus is lowered to engage the lower section as shown in FIG. 2. At this time coils 11 and 12 are energized in the same direction to create magnetic flux, which circulates through a magnetic path including upper and lower plungers or die members 4 and 5, and magnetic cores 33 and 21, thus magnetizing the magnetic powder *m* contained in molding cavity 47 defined by plungers 4 and 5 and the bore of lower central leg 34. (Column 3, line 38 through column 4, line 2).

Thus, *El Hara* merely discloses lower die member 5 and upper die member 4. Nothing in *El Hara* shows, teaches or suggests a transferable die unit transferable onto and off of a mounting base as claimed in claim 1. Rather, die units 4, 5 of *El Hara* are in fact upper and lower plungers and do not transfer onto and off a mounting base.

Additionally, *El Hara* merely discloses a powder feed box 6 which reciprocates over the bore in the lower die member 5. Powder feed box 6 is not a lid member to cover a cavity of a die as claimed in claim 1, but merely feeds in powder.

Since nothing in *El Hara* shows, teaches or suggests a transferable metal die unit and lid member as claimed in claim 1, applicants respectfully request the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(b).

Claims 2-6 depend from claim 1 and recite additional features. Applicants respectfully submit that claims 2-6 would not have been anticipated by *El Hara* within the meaning of 35 U.S.C. §102(b) at least for the reasons as set forth above. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 2-6 under 35 U.S.C. §102(b).

Claims 1-8 were rejected under 35 U.S.C. §102(b) as being anticipated by *Sagawa et al* (U.S. Patent No. 5,762,967).

Sagawa et al appears to disclose a pressing apparatus in which powder compacts are produced by pressing with punches. Referring to FIG. 3, a vertical sectional view of the apparatus is shown in which (m) is a rubber mold filled with a magnetic powder for compact at a high packing density, and (1) is a die in which the rubber mold (m) is loaded. (2a) is an upper punch and (2b) is a lower punch. (3) is a coil for generating a pulsed magnetic field and (4) is a press plunger. (5) is an upper punch supporting plate which is fixed to the press plunger (4), and to the upper punch supporting plate (5), a nearly cylindrical sleeve (6) is fixed. The upper part of the upper punch (2a) is fitted into the sleeve (6) in a slidable manner. A spring (7) such as a coil spring or the like winds round the peripheral part of the upper punch (2a). The upper end of the spring (7) is fitted into a recess (6') provided in the sleeve (6), while the lower end of the spring (7) is fitted into a recess (2a') provided in the lower part of the upper punch (2a). A space (8) is formed by the upper surface of the upper punch (2a), the inner peripheral surface of the sleeve (6) and the bottom

surface of the upper punch supporting plate (5). A bolt (9) fitted into the recess (4') provided in the central part of the bottom of the press plunger (4) penetrates the above mentioned supporting plate (5). The end of the bolt (9) is inserted into a space (10) provided along the axial line in the central part of the upper punch (2a) in a slidable manner. The cover (m2) is provided for covering the cavity (c) of the body (m1) of the rubber mold (m), which prevents the magnetic powder for compact from popping out of the rubber mold (m) when the magnetic field is applied. A back-up plate (11) is fitted into the bottom of the upper punch (2a), which is made of hard rubber or the like and plays the role of sealing the rubber mold (m), preventing the rubber mold (m) from sticking out. The die (1) is cylindrically formed and supported by a supplemental supporting plate (14) provided on an indexed table (13) through a spring means (12) such as a coil spring or plate springs. The resiliency of spring means (12) is far stronger than that of the above mentioned spring (7) winding round the upper punch (2a). On the indexed table (13), stages for each process such as a powder packing stage at which a magnetic powder for compact is packed in the rubber mold (m) are provided, although not shown in the Figure. The indexed table (13) rotates intermittently so that the desired process is carried out at each stage.

Thus, *Sagawa et al* merely discloses die units 1 which are supported by a support plate 14. Nothing in *Sagawa et al* shows, teaches or suggests transferable metal die units transferable onto and off a mounting base unit as claimed in claim 1. Rather, *Sagawa et al* teaches away from the claimed invention since the die is fixedly mounted on a support plate 14.

Additionally, *Sagawa et al* merely discloses upper punch 2a and lower punch 2b. Nothing in *Sagawa et al* shows, teaches or suggests that the punches have the same cross-sectional shape as the cavity of the die as claimed in claim 1.

Since nothing in *Sagawa et al* shows, teaches or suggests a transferable metal die unit and punches having the same cross-sectional shape of the cavity of the die unit as claimed in claim 1, applicants respectfully request the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(b).

Claims 2-8 depend from claim 1 and recite additional features. Applicants respectfully submit that claims 2-8 would not have been anticipated by *Sagawa et al* within the meaning of 35 U.S.C. § 102(b) at least for the reasons as set forth above. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 2-8 under 35 U.S.C. §102(b).

Claims 1-6 were rejected under 35 U.S.C. §102(e) as being anticipated by *Okumura et al* (U.S. Patent No. 6,602,352).

Okumura et al appears to disclose in FIG. 1 a configuration of a powder compacting apparatus 1. The powder compacting apparatus 1 includes a press 10 for producing a compact by compacting rare earth alloy powder, a powder removing device 30 for demagnetizing magnetic powder adhering to the compact, and an imaging section 50 for imaging the compact. The press 10 will be described with reference to FIGS. 1 to 3A and 3B. The press 10 includes a die 12 having through holes (die holes) for forming cavities, a base plate 13 in which the die 12 is embedded, and an upper punch 14 and a lower punch 16 for compressing powder in the through holes of the die 12. In a condition where an upper portion of the lower punch 16 is partially inserted in the through holes of the die 12, cavities 18 are

formed in an upper portion of the lower punch 16. Powder feeding into a cavity 18 is performed in the following manner. A feeder box (or a shoebox) 20 which is filled with powder is moved to the above of the cavity 18, and the powder is caused to drop in the cavity from a bottom (an opening portion) of the feeder box 20. (Column 7, lines 12-32). After the cavity 18 is filled with the powder, the upper punch 14 starts to move downwardly toward the cavity 18. As shown in FIG. 3A, the upper punch 14 and the lower punch 16 compresses and compacts the alloy powder in the cavity 18, so as to produce the powder compact 3. (Column 8, lines 5-9).

Thus, *Okumura et al* merely discloses a die 12 embedded in a die plate 12. Nothing in *Okumura et al* shows, teaches or suggests a transferable metal die unit as claimed in claim 1. Rather, the die unit is embedded in a base plate 13.

Additionally, nothing in *Okumura et al* shows, teaches or suggests a lid member. Rather, *Okumura et al* only discloses the punches 14 and 16.

Since nothing in *Okumura et al* shows, teaches or suggests a transferable metal die unit and a lid member as claimed in claim 1, applicants respectfully request the Examiner withdraws the rejection to claim 1 under 35 U.S.C. §102(e).

Claims 2-6 depend from claim 1 and recite additional features. Applicants respectfully submit that claims 2-6 would not have been anticipated by *Okumura et al* within the meaning of 35 U.S.C. §102(e) at least for the reasons as set forth above. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 2-6 under 35 U.S.C. §102(e).

Claims 9-10 were rejected under 35 U.S.C. §103 as being unpatentable over *El Hara* or *Okumura et al* in view of *Maekawa et al* (U.S. Patent No. 3,663,147).

Claims 9-12 were rejected under 35 U.S.C. §103 as being unpatentable over *Sagawa et al* in view of *Maekawa et al*.

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in the primary references to *El Hara*, *Sagawa et al* or *Okumura et al* shows, teaches or suggests the primary features as claimed in claim 1, applicants respectfully submit that the combination of the primary references with the secondary reference to *Maekawa et al* would not overcome the deficiencies of the primary reference. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 9-12 under 35 U.S.C. §103.

The prior art of record, which is not relied upon, is acknowledged. The references taken singularly or in combination do not anticipate or make obvious the claimed invention.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicants respectfully petition for an appropriate extension of time.

The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: October 31, 2006

By:

A handwritten signature in black ink, appearing to read 'EMAS', is written over a horizontal line.

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